

REMARKS

Favorable reconsideration is respectfully requested.

The claims are 1, 2 and 4 to 8.

The above amendment incorporates the features of claim 3 in claim 1.

The significance of this amendment will become further apparent from the remarks below.

Claims 1 to 8 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 to 7 of co-pending Application No. 10/644,737.

Further, claims 1 to 8 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 to 9 of co-pending Application No. 10/471,772.

These rejections are respectfully traversed.

The over-coating agent claimed in co-pending application Serial No. 10/664,737 contains a copolymer or a mixture of polyvinyl alcohol with a water-soluble polymer other than polyvinyl alcohol. By adopting such constituent features, the over-coating agent of application Serial No. 10/644,737 can effectively increase a shrinkage amount (the amount of heat shrinking) in a heating treatment, thereby achieving a remarkably improved effect of forming or defining fine-line patterns.

It does not teach or suggest the combination of the water-soluble polymer with the specified water-soluble crosslinking agent as presently claimed. In this regard, the presently claimed subject matter is different and unobvious from the claims of Serial No. 10/644,737.

The over-coating agent claimed in co-pending application Serial No. 10/471,772 contains a water-soluble polymer and a specified surfactant. In contrast, the present invention does not contain the surfactant as a required component. In this regard, the presently claimed subject matter is different and unobvious from the claims of Serial No. 10/471,772.

Accordingly, the double patenting rejections are untenable.

Claims 1 to 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chun, U.S. 6,486,058.

This rejection is respectfully traversed.

Chun (U.S. 6,486,058) does not disclose or teach the usage of the specified water-soluble crosslinking agent as presently claimed.

It is disclosed in Chun that a resist-reflow buffer layer is formed of a water-soluble organic over-coating material (WASOOM), and that any suitable water soluble organic over-coating material can be used which does not substantially react with the photoresist pattern at baking temperature and thus does not substantially form an interfacial layer with the photoresist pattern. However, it does not teach or suggest the combination of a water-soluble polymer with the specified water-soluble crosslinking agent as presently claimed.

Furthermore, in the present invention, heating treatment to cause thermal shrinkage of the film of the over-coating agent is preferably done at a temperature that will not cause thermal fluidizing of the photoresist pattern.

The temperature that will not cause thermal fluidizing of the photoresist pattern is such a temperature that when a substrate on which the photoresist pattern has been formed but no film of the over-coating agent has been formed is heated, the photoresist pattern will not experience any dimensional changes.

Performing a heat treatment under such temperature conditions is very effective for various reasons, e.g. a fine-line pattern of good profile can be formed more efficiently and the duty ratio in the plane of a wafer, or the dependency on the spacing between photoresist patterns in the plane of a wafer, can be reduced (See page 18, lines 19 to page 19, line 22 of the present specification).

In contrast, the resist pattern overcoated with WASOOM (=resist-reflow buffer layer) in Chun reflows to shrink the size of hole openings. Chun does not teach or suggest the presently claimed over-coating agent or method employing it.

For the foregoing reasons, it is apparent that the rejection on Chun is untenable and should be withdrawn.

No further issues remaining, allowance of this application is respectfully requested.

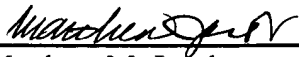
If the Examiner has any comments or proposals for expediting prosecution, please

contact undersigned at the telephone number below.

Respectfully submitted,

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